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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,899	09/20/2000	Masayoshi Iwase	10517/74	6300

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EXAMINER	
MERCADO, JULIAN A	
ART UNIT	PAPER NUMBER
1745	6

DATE MAILED: 04/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

IVF-6

Office Action Summary	Application No.	Applicant(s)	
	09/665,899	IWASE ET AL.	
	Examiner	Art Unit	
	Julian A. Mercado	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☒ Claim(s) *15 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. *09/216,778* .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2, 4, 5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Objections

Claims 15 and 19 are objected to because of the following informalities:

In claim 15 at line 1, it is suggested to insert --the-- after "wherein".

In claim 19 at lines 5-6, it is suggested to delete the second instance of "is formed".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 3, 7, 10, 14 and 18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 3 recites the limitation "wherein the fluid includes a coolant" in line 1. The specification has been reviewed for support for the instant limitation. It appears to the examiner, however, that the claimed plurality of regions defined by the rib portion and the plurality of projections do not include coolant within its fluid passages. Rather, the coolant are supplied through holes [301, 303] which are not part of the fluid passage regions in the separator. See specification, page 27 at line 13 et seq. and corresponding Figure 6.

Claims 7, 10, 14 and 18 each recites a similar limitation to claim 3 above and are thus rejected under the same grounds.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 4, 6, 9, 13, 17 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the fluid includes supplying gas" in line 1. The claim language is indefinite as the present participle "supplying" does not specify a complete action or process such as, e.g. where the gas is supplied. It appears to the examiner that "supplying" should be changed to either --a supplied-- or --a--, or deleted.

Claims 6, 9, 13 and 17 each recites a similar limitation to claim 2 above and are thus rejected under the same grounds.

Claim 4 recites the limitation "the manifold" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "supply gas" in line 8. The supply gas is claimed produced by the joint body, i.e. the fuel cell. Thus, it is unclear how the fuel cell "produces" a supply gas, as the fuel cell itself is "supplied" with oxidant or reactant gases.

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Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Kurita et al. (U.S. Pat. 5,998,055).

Kurita teaches a fuell cell comprising a joint body having an electrolyte member [1] interposed between a pair of electrodes [2, shown in duplicate]. A separator [3] is held by the joint body insofar as it is disclosed to be pressingly contacting the electrodes. (col. 4 lines 48-51). In view of Figure 2, it can be further appreciated that the separator is in direct contact with at least the outer edges of the electrolyte member. A plurality of projections [a] project from the separator bottom, while a plurality of rib portions [b] divide the projections into discrete regions. (Figures1 and 3, col. 6 line 1 et seq.)

To the extent that the claims are understood by the examiner for the reasons discussed under 35 U.S.C. 112, second paragraph (discussion above), the projections form a fluid passage for a supplied oxidant or fuel gas. (col. 4 line 57 et seq.)

To the extent that the claims are understood by the examiner for the reasons discussed under 35 U.S.C. 112, first paragraph (discussion above), the separator plate includes a path [7] for the distribution of coolant. (col. 7 lines 9-10)

In view of Figure 3, a turning section is taken as the section of projections mutually shared between the fluid passage region defined by ribs [21A] and by ribs [21B]. This turning section, as seen in the upper rightmost quadrant of Figure 3, is defined by a plurality of rib pieces (labeled in this Figure as reference character [D]) The distal end of the [N-1] fluid passage region turns into the proximal end of the [N-2] fluid passage region. Kurita teaches the as found in column 6 lines 25-31:

> By thus decreasing the number of passages of the intermediate channel part **21** toward the downstream, the flow rate of the gas flowing into the outlet-side channel part **22B** can be increased in comparison with that in the case where the number of passages are constant as in the first preferred embodiment, and water dischargeability is enhanced without increasing the volume of supply gas or pressure loss.

Thus, the turning section near the proximal end of the [N-2] section is appreciated to be narrower in width than the width of the previous fluid passage region. (applies specifically to claim 8) Further, it naturally follows that each succeeding fluid passage region is of a different width, and that the width of the first region near the inlet portion [22A] is wider than the width near the outlet portion [22B]. (applies specifically to claims 11 and 12)

As shown in Figure 3, the number of projections in the [N-1] region is shown at nine, while the number of projections in the [N-2] region is shown at seven, etc. Thus, the number of projections arranged in each region is different and that the number near the inlet portion [22A] is greater than that near the outlet portion [22B]. (applies specifically to claims 15 and 16)

To the extent that claim 4 is understood by the examiner for the reasons discussed under 35 U.S.C. 112, second paragraph (discussion above), at least a portion of the manifold or

separator passage is bent, as shown by the area occupied by rib [20]. (Figure 5, col. 6 lines 42-44)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakanishi et al. (U.S. Pat. 4,910,100).

Nakanishi teaches a fuel cell comprising a joint body [13] having an electrolyte member interposed between a pair of electrodes. A gas passage of a porous body has linear grooves [8A] bent in a semicircular shape and extending along the inside of the gas passage. (Figure 6(A)). To the extent that the claim is understood by the examiner for the reasons discussed under 35 U.S.C. 112, second paragraph (discussion above), as to the size of the curved portion of the bent linear grooves, Nakanishi teaches the following:

> **FIGS. 6(A) and 6(B) show a cell stack adopting a modified design of guide vanes 8A. FIG. 6(A) is a plan view and FIG. 5(A) is a cross section as viewed in the direction indicated by arrow 6A—6A in FIG. 6(A). The guide vanes 8A are formed as spiral coils. The pitch between adjacent turns of the spiral is selected at an optimum value which depends upon the diameter of the cell stack. The major advantage of this design is that the reactant gases can be admitted uniformly into the single cells 13 and that the discharged gases can be collected in one place.**

Thus, the size or "pitch" of the curved portions is varied and is "selected at an optimum value". While Nakanishi does not explicitly teach this size to be dependent on the total amount of gas produced by the joint body, the skilled artisan would find obvious that the diameter of the cell stack would directly affect the amount of gas produced. A larger cell stack, for example, would result in greater discharge gas (and reactant water) produced. Thus, optimization of the size of the curved portions dependent on the diameter of the cell stack (as specifically taught by Nakanishi) would naturally flow to be dependent on the total amount of gas and vapor produced by the joint body of the fuel cell, at least as would be obvious to the skilled artisan.

Conclusion

References brought to the examiner's attention in the IDS paper filed September 20, 2000 (paper No. 2) have been properly made of record in attached Form PTO-892.

Supplemental IDS paper filed February 6, 2001 (paper No. 5) is an exact duplicate to IDS paper filed December 18, 2000 (paper No. 4) with exception to the 6th Foreign Patent cited with document number 62-076 260. Applicant notes that this document was incorrectly cited in Paper No. 4. To avoid confusion upon allowance of the application, the duplicate citations between both IDS papers have been lined through by the examiner.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian A. Mercado whose telephone number is (703) 305-0511. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (703) 308-2383. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 305-3599 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jam
April 18, 2002

STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700